

II. Remarks

A. Status of the Claims

This application has been reviewed in light of the Non-Final Office Action dated March 15, 2010 (hereinafter referred to as the "Office Action"). Claims 1-15, 17 and 20-30 will be pending in the present application following entry of this paper. Claims 1, 22 and 30 are in independent form. Claims 1 and 22 have been amended to present allowable subject matter in independent form. New claim 30 has been added and is directed to original claim 11 which was deemed allowable by the Examiner in the Office Action. Support for the new claim and amended claims may be found in the present application as published (U.S. Publication No. 2008/0044685) at least at paragraphs [0027] and [0039]. Applicant respectfully submits that no new matter has been added by virtue of this amendment. Claims 16, 18 and 19 have been cancelled in view of the aforementioned amendments. In light of the amendments presented herein and the remarks set forth below, Applicant respectfully requests allowance of Claims 1-15, 17 and 20-30.

B. Allowable Subject Matter

Applicant wishes to thank Examiner Vijayakumar for the indication that original claims 11, 19 and 24-28 are directed to allowable subject matter and would be allowed if rewritten in independent form. Accordingly, original claim 11 is presented in independent form as new claim 30. Claims 1 and 22 are amended to include the allowable feature of original claim 19. *See Office Action, Page 5.*

C. Claim Rejections under 35 U.S.C. § 102 and § 103 over Bishop

In the Office Action, original claims 1-5, 7-10, 12-18, 20-23 and 29 were rejected under 35 U.S.C. § 102(b) as being anticipated by Bishop *et al.* ("Article Comprising Improved Noble Metal-Based Alloys and Method for Making the Same" - U.S. Publication No. 2001/0008157) or

in the alternative under 35 U.S.C. § 103(a) as being obvious over Bishop *et al.*

The Examiner indicated that original claim 19, directed to a concentration gradient of nanoscale particles in a base material, would be allowed if rewritten in independent form. *Office Action, Page 5*. Without conceding the propriety of the rejection of claims 1 and 22, and solely to advance prosecution of the present application, Applicant has amended claims 1 and 22 to include the concentration gradient set forth in original claim 19. In view of the amendments to claims 1 and 22, Applicant respectfully requests that the rejection of claims 1-5, 7-10, 12-15, 17, 20-23 and 29 under 35 U.S.C. § 102(b) and § 103(a) be withdrawn.

In the Office Action, original claim 8 was rejected under 35 U.S.C. § 102(b) as being anticipated by Bishop *et al.* Notwithstanding the reasons for allowance illustrated above regarding claim 8 (as dependent on amended claim 1), Applicant further notes for the record that Bishop *et al.* fails to teach or suggest insoluble nanoscale metal particles dispersed in a metal matrix. Instead, Bishop *et al.* teaches dispersing particles (including oxides, nitrides, carbides, sulfides, fluorides, oxycarbides, oxynitrides and nanowires such as carbon nanotubes) in a noble metal matrix. Bishop *et al.* [0041]. However, claim 8 of the present invention teaches incorporating particles of a second *metal* into the base to create an artificial alloy such that the particles are not absorbed into the base material. Bishop *et al.* does not expressly or inherently describe incorporation of metal particles into a base material and therefore does not anticipate original claim 8 of the present invention.

D. Claim rejections under 35 U.S.C. § 103 over Chow

In the Office Actions, claims 1-10, 14-18 and 22-23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Chow *et al.* (U.S. Patent No. 5,759,230). Chow *et al.* teaches composite metal films and powders containing nanoparticles with a size of 1-100nm that can be

used to coat a substrate. The Examiner acknowledges that the prior art fails to provide examples of films and powders containing a base metal containing a dispersion of a second component but contends that it would have been obvious to a person of ordinary skill in the art to coat the composite films over a substrate for use as an electronic device. *Office Action, Page 5.*

Claims 1 and 22 have been amended to incorporate allowable subject matter described in original claim 19 and, therefore, Applicant respectfully requests that the rejection of claims 1-10, 14-18 and 22-23 under 35 U.S.C. § 103(a) be removed. In addition to this basis for allowance, Applicant respectfully disagrees with Examiner's assessment of Chow *et al.* Embodiments of the present invention relate to nanoparticles dispersed *within* a metal matrix. Chow *et al.*, however, teaches substrates coated with nanoscale metals and powders. Chow *et al.* C.4, L.24-26. There is no indication in Chow *et al.* that coating substrates with metal powders would lead to articles having increased wear resistance and strength while at the same time maintaining electrical conductivity. Additionally, it is known in the art that certain electronic devices such as those used in high power microwave systems are required to repeatedly emit electrons from the wall surface. This repeated electron emission leads to pulsed heating of the wall surface resulting in surface fatigue that can lead to significant structural damage. Chow *et al.* provides no basis for a person of ordinary skill in the art to believe that substrates coated with thin metal powders and films would offer substantial enhancements to surface fatigue tolerance or that the coatings would be able to repeatedly emit electrons necessary for use in high conductivity devices.

In addition, since Chow *et al.* fails to teach dispersing a second material into the original metal powder/film, Chow *et al.* necessarily fails to teach or suggest a concentration gradient of the dispersed material as called for in amended claim 1.

III. Conclusion

For at least the reasons set forth above, this patent application, as amended, is now in condition for allowance. Reconsideration and allowance of claims 1-15, 17 and 20-30 are respectfully requested.

Applicant asks that all correspondence related to this matter continue to be directed to our address listed below.

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